condensation is present. In the absence of condensation, the estimates are almost equal. In other embodiments, only either the first or second length is used to estimate the drop size.

[0653] FIG. **83** shows a flow chart diagram of a method **900** for reducing noise from condensation in accordance with an embodiment of the present disclosure. Method **900** includes acts **902-910**.

[0654] Act **902** captures an image of a drip chamber. Act **904** performs a canny, edge-detection operation on the image to generate a first processed image. Act **906** performs an AND-operation on a pixel on a first side of an axis of the first processed image with a corresponding mirror pixel on the second side of the axis of the first processed image. That is, Act **902** defines an axis in the first process image, and performs an AND on each pixel on one side with a pixel on the other side, such that the pixel on the other side is symmetrical with the pixel on first side. For example, a 40 (X-axis) by 40 (Y-axis) image may have an axis defined between pixel columns **19** and **20**. The top, left pixel would be pixel (1,1) A pixel at location (1, 5) would be AND-ed with a pixel at (40,5). The resulting pixel would be used for both locations (1, 5) and (40,5) to generate the second processed image.

[0655] After act **906** is performed, act **908** determines whether all of the pixels have been processed. Act **908** repeats act **906** until all pixels have been processed. Act **910** provides a second processed image that is the results of all of the AND operations.

[0656] FIG. **84** shows another valve **2000** for use with a flow meter in accordance with an embodiment of the present disclosure. The valve **2000** is coupled to a portion of an inlet fluid line **2001** and a portion of an outlet fluid line **2002**. A section of flexible tube **2003** is coupled between the portion of an inlet fluid line **2001** and a portion of an outlet fluid line **2002** within a rigid cylinder **2004**. A fluid pump **2005** is coupled to the rigid cylinder **2004** to pump fluid into and out of the rigid cylinder **2004**. The rigid cylinder **2004** may include a fluid, e.g., a liquid.

[0657] An actuator **2007** control a plunger **2008** of the pump **2005** to use the fluid within the rigid cylinder **2004** to compress the flexible tube section **2003** to control the flow of fluid between the portion of an inlet fluid line **2001** and a portion of an outlet fluid line **2002**. The pump **2005** is coupled to the rigid cylinder **2004** via a coupler **2006**. The actuator **2007** may be controlled by a processor (e.g., the processor **15** of FIG. **1**). By collapsing the flexible tube section **2003** flow of fluid flowing within the flexible tube section may be controlled by actuate of the actuator **2007**.

[0658] Various alternatives and modifications can be devised by those skilled in the art without departing from the disclosure. Accordingly, the present disclosure is intended to embrace all such alternatives, modifications and variances. Additionally, while several embodiments of the present disclosure have been shown in the drawings and/or discussed herein, it is not intended that the disclosure be limited thereto, as it is intended that the disclosure be as broad in scope as the art will allow and that the specification be read likewise. Therefore, the above description should not be construed as limiting, but merely as exemplifications of particular embodiments. And, those skilled in the art will envision other modifications within the scope and spirit of the claims appended hereto. Other elements, steps, methods and techniques that are insubstantially different from those described above and/or in the appended claims are also intended to be within the scope of the disclosure.

[0659] The embodiments shown in the drawings are presented only to demonstrate certain examples of the disclosure. And, the drawings described are only illustrative and are non-limiting. In the drawings, for illustrative purposes, the size of some of the elements may be exaggerated and not drawn to a particular scale. Additionally, elements shown within the drawings that have the same numbers may be identical elements or may be similar elements, depending on the context.

[0660] Where the term "comprising" is used in the present description and claims, it does not exclude other elements or steps. Where an indefinite or definite article is used when referring to a singular noun, e.g., "a," "an," or "the," this includes a plural of that noun unless something otherwise is specifically stated. Hence, the term "comprising" should not be interpreted as being restricted to the items listed thereafter; it does not exclude other elements or steps, and so the scope of the expression "a device comprising items A and B" should not be limited to devices consisting only of components A and B. This expression signifies that, with respect to the present disclosure, the only relevant components of the device are A and B.

[0661] Furthermore, the terms "first," "second," "third," and the like, whether used in the description or in the claims, are provided for distinguishing between similar elements and not necessarily for describing a sequential or chronological order. It is to be understood that the terms so used are interchangeable under appropriate circumstances (unless clearly disclosed otherwise) and that the embodiments of the disclosure described herein are capable of operation in other sequences and/or arrangements than are described or illustrated herein.

What is claimed is:

1. A flow meter, comprising:

an image sensor having a field of view, wherein the image sensor is positioned to view a drip chamber within the field of view;

a valve comprising:

a rigid chamber;

a flexible tube section disposed within the rigid chamber, the flexible tube section in fluid communication with the drip chamber;

a pump configured to pump fluid into or out of the rigid chamber to thereby actuate the valve; and

an actuator coupled to the pump and configured to actuate the pump; and

at least one processor in communication with the image sensor to receive image data therefrom and with the actuator to actuate the valve, wherein the at least one processor compares an image of the image data to a reference image to estimate at least one parameter of liquid within the drip chamber.

2. The flow meter according to claim **1**, wherein the at least one parameter of liquid is an estimated flow of fluid through the drip chamber.

3. The flow meter according to claim **1**, wherein the at least one processor determines an existence of a free flow condition using a distortion of a background pattern caused by a liquid as indicated by the image data.

4. The flow meter according to claim **3**, wherein the background pattern is an array of lines having at least one